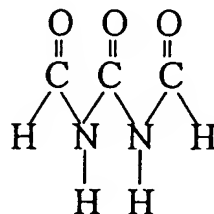


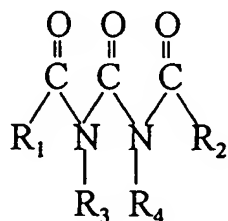
What Is Claimed Is:

1. A composition of matter comprising diformylurea having the formula



5

2. A composition of matter having the formula



where R_1 , R_2 , R_3 and R_4 , are the same or different and are selected from the group consisting of hydrogen, substituted and unsubstituted alkyl, allyl, vinyl and alkoxy groups having from 1 to 6 carbon atoms, substituted and unsubstituted phenyl groups and the halides.

3. The composition of matter of Claim 2 wherein R_3 and R_4 are hydrogen.

4. The composition of matter of Claim 3 wherein R_1 and R_2 are selected from the group consisting of hydrogen and alkyl groups having from 1 to 3 carbon atoms.

5. The composition of matter of Claim 3 wherein R_1 and R_2 are methyl.

6. A reaction product formed by reacting formic acid with urea where the molar ratio of formic acid to urea is about 2:1.

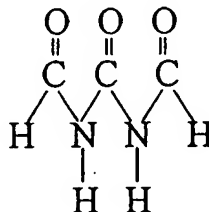
5 7. A reaction product formed by reacting a carboxylic acid having from 1 to 7 carbon atoms with urea where the molar ratio of carboxylic acid to urea is about 2:1.

8. The reaction product of Claim 7 wherein said carboxylic acid is acetic acid.

10 9. The reaction product of Claim 7 wherein said carboxylic acid has the formula $RCOOH$ where R is selected from the group consisting of hydrogen, substituted and unsubstituted alkyl, allyl, vinyl and alkoxy groups having from 1 to 6 carbon atoms, substituted and unsubstituted phenyl groups and the halides.

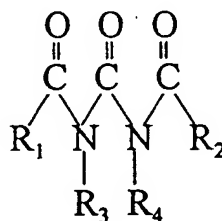
10. The reaction product of Claim 9 wherein said urea has the formula
15 $(NHR')_2CO$ where each R' is the same or different and is selected from the group consisting of hydrogen, substituted and unsubstituted alkyl groups having from 1 to 6 carbon atoms, substituted and unsubstituted alkoxy groups having from 1 to 6 carbon atoms, substituted and unsubstituted phenyl groups and the halides.

11. A method for preparing diformylurea having the formula



comprising reacting formic acid with urea.

12. A method for preparing a substituted urea having the formula



comprising reacting a carboxylic acid with a reactant selected from the group
5 consisting of urea, N-mono-substituted ureas and N,N'-di-substituted ureas,
where R_1 , R_2 , R_3 and R_4 , are the same or different and are selected from the
group consisting of hydrogen, substituted and unsubstituted alkyl, allyl, vinyl and
alkoxyl groups having from 1 to 6 carbon atoms, substituted and unsubstituted
phenyl groups and the halides.

- 10 13. The method of Claim 12 wherein the molar ratio of carboxylic acid
to urea is about 2:1.

14. The method of claim 12 further comprising reacting said-carboxylic acid and reactant at a temperature from about 10° C to about 140° C.

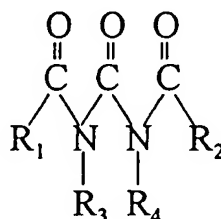
15. The method of claim 13 further comprising reacting said carboxylic acid and reactant at a temperature from about 15° C to about 40° C.

5 16. The method of Claim 13 wherein R_3 and R_4 are hydrogen.

17. The method of Claim 16 wherein R_1 and R_2 are hydrogen.

18. The method of Claim 17 further comprising reacting said carboxylic acid and urea at about room temperature and with stirring until clear.

19. A method for enhancing the growth of a plant, comprising applying to seeds for said plant prior to planting, to soil surrounding said plant, or to foliage of said plant, an N,N' - substituted urea having the formula



5 where R₁, R₂, R₃ and R₄ are the same or different and are selected from the group consisting of hydrogen, substituted and unsubstituted alkyl, allyl, vinyl and alkoxy groups having from 1 to 6 carbon atoms, substituted and unsubstituted phenyl groups and the halides.

20. The method of Claim 19 wherein R₁, R₂, R₃ and R₄ are hydrogen.

10 21. The method of Claim 19 wherein an aqueous solution having a concentration from about 0.001-1.0 M of said N,N' - substituted urea is applied to said seeds at a rate of about 15-750 ml. of solution per 100 lbs. of seed.

22. The method of Claim 21 wherein R₁, R₂, R₃ and R₄ are hydrogen.

23. The method of Claim 21 wherein said seeds are soaked in said
15 solution for about 2-48 hours prior to planting.

24. The method of Claim 19 wherein an aqueous solution having a concentration from about 0.0001-1.0 M of said N,N'- substituted urea is applied to said foliage at a rate of about 1-100 gm. of said substituted urea per acre.

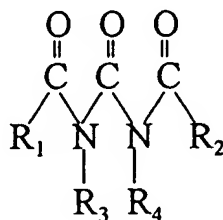
5 25. The method of Claim 24 wherein R₁, R₂, R₃ and R₄ are hydrogen.

26. The method of Claim 24 wherein said solution further comprises a vegetable oil and a surfactant.

27. The method of Claim 26 wherein said vegetable oil is selected from the group consisting of sunflower oil and soybean oil, and said surfactant is
10 related from the group consisting of organic polyphosphates and ethoxylated nonophenols.

28. A method for enhancing the growth of a plant, comprising applying to seeds for said plant prior to planting, to soil surrounding said plant or to foliage of said plant an N,N' - substituted urea selected from the group consisting
15 of the compositions of matter of Claims 1-5 and the reaction products of Claims 6-10.

29. A treated seed comprising a plant seed to which has been applied an N,N' - substituted urea having the formula

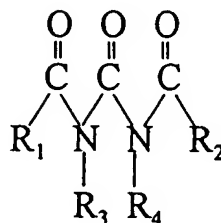


where R₁, R₂, R₃ and R₄ are the same or different and are selected from the group consisting of hydrogen, substituted and unsubstituted alkyl, allyl, vinyl and alkoxy groups having from 1 to 6 carbon atoms, substituted and unsubstituted phenyl groups and the halides.

30. The treated seed of Claim 29 wherein R₁, R₂, R₃ and R₄ are hydrogen.

31. The treated seed of Claim 29 wherein said plant seed has been soaked in an aqueous solution containing said N,N'- substituted urea.

32. An improved plant seed comprising a seed to which has been applied an N,N' - substituted urea having the formula



where R₁, R₂, R₃ and R₄ are the same or different and are selected from the group consisting of hydrogen, substituted and unsubstituted alkyl, allyl, vinyl and
5 alkoxy groups having from 1 to 6 carbon atoms, substituted and unsubstituted phenyl groups and the halides.

33. The improved plant seed of Claim 31 wherein R₁, R₂, R₃ and R₄ are hydrogen.